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Rehab Needs of Service Members Recovering from Traumatic Amputations

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By Dr. Ted Melcer, Ph.D, research psychologist, Naval Health Research Center, and the Health Promotion and Wellness Department at Navy and Marine Corps Public Health Center



The Naval Health Research Center (NHRC) has a dedicated team researching the health outcomes of amputees injured in Iraq and Afghanistan to better understand their rehabilitation needs.

During the early recovery phase, individuals with traumatic amputations frequently experience significant stress and challenges while modifying their lifestyles to reduce health risks. The amputee population can benefit greatly from resources with actionable information on healthy lifestyles that also addresses their health concerns and minimizes complications.

With more than 1,700 U.S. service members experiencing major-limb amputations as a result of combat during missions from 2001 – 2012(1), the Naval Health Research Center (NHRC) has a dedicated team researching the health outcomes of amputees injured in Iraq and Afghanistan to

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The Expeditionary Medical Encounter Database (EMED) contains medical records collected for patients' within hours of injury combined with health diagnoses kept in a patients' long-term medical records in the Department of Defense (DOD) and Veterans Affairs (VA) healthcare systems.

better understand their rehabilitation needs.

Since nearly all combat amputees use DOD or VA health care, we can follow the lifelong health outcomes of this large population of patients. For most of our research to date, we retrospectively review health records for patients who sustained serious lower limb injuries from 2001 to 2008.(2-5) Our research reinforces that service members with traumatic amputations require coordinated care from a variety of specialties to address the range of comorbid risks they may experience.

In fact, nearly 90 percent of patients use physical and occupational therapy, prosthetic/orthotic services, and psychiatric care.(2) Generally, research shows that amputees should work closely with their providers to choose and regularly maintain appropriate prostheses to help avoid further complications such as pain and musculoskeletal disorders(6). In our research, we found that the primary health conditions associated with traumatic amputations in the first years after injury include both physical and psychological health concerns.

Wound infection, phantom limb pain, acute and chronic pain, heterotopic ossification (excess bone growth within soft tissues in the residual limb), and pulmonary embolism are the primary physical concerns we discovered (2-5). We found that 75 percent of patients had at least one psychological diagnosis including adjustment and anxiety disorders. Interestingly, we found a substantial increase and apparently a delayed onset of post-traumatic stress disorder (PTSD) among these service members – approximately 20 percent had PTSD diagnosis within their first year after amputation but then 30-35 percent of patients had PTSD in their second year. (2)



This finding reinforces that healthcare providers should conduct regular psychological health screenings for several years after injury. In addition, healthcare providers should monitor for substance abuse,

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Early amputation within 90 days of injury generally was associated with reduced rates of adverse physical and psychological health outcomes.

which was experienced by 10-20 percent of patients and may be an

underreported concern because of the high percentage of patients with pain disorders. (3) Also important, our research compared health outcomes for combat amputee and limb salvage (LS) patients injured in the Iraq and Afghanistan wars. Many combatants sustained serious leg injuries that were surgically repaired without amputation. These are so-called limb salvage patients. We found that early amputation within 90 days of injury generally was associated with reduced rates of adverse physical and psychological health outcomes, including prolonged infections and PTSD, relative to late amputation (more than 90 days after injury) or LS in the short term. (5)

Our findings can inform healthcare providers of the differing clinical consequences of early amputation and LS. They also indicate the need for separate healthcare pathways for amputees and LS patients. Our most recent data indicates that, for relatively young patients, these populations have relatively high rates of obesity, tobacco use disorder, hypertension, osteoporosis, and osteoarthritis. Providers and service members may not have time to regularly review scientific literature for studies and to interpret the trends and outcomes identified in research. This is where our partnership with the [Navy and Marine Corps Public Health Center](#) (NMCPHC) [Health Promotion and Wellness Department](#) (HPW) may be most beneficial. HPW can translate the research findings into accessible materials as another resource to help providers and health educators support the recovery of service members. In fact, NMCPHC recently published the HPW Resources to Assist Wounded, Ill, and Injured Sailors and Marines with Traumatic Amputations Report to identify evidence-based resources focused on amputees and their specific health needs.

It's important for amputees to adopt a healthy lifestyle focused on proper nutrition and the appropriate level of activity in order to avoid weight gain and lower the risk of further injury, overuse injuries, or arthritis. (6) It's also best to avoid tobacco use disorder, which occurred in 40 percent of amputees, as it slows down wound healing. (7) HPW resources address the underlying factors of health that are necessary to promote a more rapid and successful recovery during the short-term phase of rehabilitation and also aid in preventing complications associated with chronic illnesses among this population.



It's important for amputees to adopt a healthy lifestyle focused on proper nutrition and the appropriate level of activity.

Visit the [NMCPHC HPW WII Program](#) website for more information.

Editor's Note: Dr. Ted Melcer has been research psychologist with NHRC for 14 years and has a PhD in research psychology from Indiana University with postdoctoral training in research epidemiology at the University of California San Diego. The NMCPHC HPW Department provides innovative and evidence-based health promotion and wellness programs and services that facilitate readiness and resilience, prevent illness and injury, hasten recovery,

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and promote lifelong healthy behaviors and lifestyles.

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